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The Cañaveral de León stela (Huelva, Spain). A monumental sculpture in a landscape of settlements and pathways

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ABSTRACT

A newly discovered prehistoric stela from Cañaveral de León (Huelva, Spain) is studied through a combination of scientific methods, including thin section petrography and lithological contextualisation, various state-of-the-art digital imaging techniques for the analysis of the engraved motifs (3D modelling and Reflectance Transformation Imaging), and detection of pigments on its surface (Principal Components Analysis, HSI-contrast stretch, ferric pigments index and algebraic operations between bands), as well as archaeological surveys aimed at establishing the landscape context the stela was part of. The results reveal this stela is analogous to a larger series of late prehistoric sculptures portraying personages with 'headdresses', largely concentrated in the Iberian south-west and often connected to Bronze Age settlements and burial sites. In addition, the Cañaveral de León stela is closely associated to an old pathway that has had a historical prominence in terms of long-distance mobility, connecting various regions of western Spain in a South-North direction.

1. Introduction

The Iberian Peninsula is rich in prehistoric monumental sculpture. From menhirs and statue-menhirs, found in isolation or in clusters (such as cromlechs), through the extensive array of dressed stones used or re-used as part of megalithic tombs, dated to the Neolithic and the Copper Age, all the way to the various types of 'decorated' stelae generally dated to the Bronze Age, and to the first epigraphic stelae of the Early Iron Age, bearing inscriptions in a variety of pre-Latin scripts, all are part of the complex make-up of Iberian landscapes together with natural places, settlements, burial places, pathways, and rock art sites. To this date, no reliable estimate of the number of such productions currently recorded in the Spanish and Portuguese literature and kept either in situ or in museums, is available, but general reviews published over the last decades suggest their number must be set in the thousands (Almagro Basch, 1966; Barceló Álvarez, 1991; Díaz-Guardamino Uribe, 2010, see Celestino Pérez, 2001; Harrison, 2004 for reviews on the most recent subsets).

The catalogue of prehistoric monumental sculptures in Iberia continues to increase, as new pieces are being discovered regularly. In addition, recent investigations have considerably expanded the perspectives for the study of these monuments with new theoretical approaches, methods and analytical techniques. For most of the 20th century, prehistoric stelae were basically treated as static artistic objects dressed with graphic representations but devoid of significant spatial, social or cultural contexts. Within the culture-history approach focus was placed on the identification of the objects represented on them, their origins, and that of the 'peoples' who made them. Instead, recent approaches have sought to better understand stone sculptures as socially and ideologically active agents within broader territorial and landscape

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contexts that gave them cultural significance. Along with the contextual treatment of these stone monuments, the greater precision of digital techniques for the recording of graphic motifs has also allowed for an improved assessment of their significance in terms of biography, contributing to our understanding of prehistoric monumental sculptures as elements of persistent, albeit changing significance over time.

This paper presents the study of a new stela, discovered in April 2018 in the municipality of Cañaveral de León, province of Huelva, in southwestern Spain (Fig. 1). This stela was found by chance, embedded in the subsoil of a local rural road, Las Capellanías, when maintenance work was being carried out on it by a crew of workers deployed by Cañaveral de León's city council. Shortly after its discovery, the stela was taken to the Huelva Museum, where it is now shown as part of its permanent exhibition.

The research carried out in the last two years has consisted of a multidisciplinary approach to the stela, including the materiality of the stone and the graphic motifs depicted on it, as well as its spatial context in terms of settlements, burial places and, specially, pathways. For obvious reasons, the association of this monument with the local network of pathways has special importance. This study follows the methodological approach used by us in other investigations carried out in the last two decades on newly discovered stelae, such as those of Almadén de la Plata (García Sanjuán et al., 2006; García Sanjuán, 2011; Díaz-Guardamino et al., 2015), Montoro (García Sanjuán et al., 2017) and Mirasiviene (Díaz-Guardamino et al., 2019), or on previously discovered but poorly understood ones such as the case of Almargen (Díaz-Guardamino et al., 2020).

In terms of its landscape setting, the Cañaveral de León stela is exceptional, as it is one of few cases to have been found underneath a historical pathway. Las Capellanias was not just a regular rural - local - road, but one connecting distant regions. In Iberia, the relationship between prehistoric monuments and pathways has been noted and discussed for a long time, both concerning stelae (Ruiz-Gálvez Priego and Galán Domingo, 1991; Galán Domingo, 1993; García Sanjuán et al., 2006; 2017; Fábrega Álvarez et al., 2011; Díaz-Guardamino, 2010; Díaz-Guardamino et al., 2019; 2020), and megaliths (Chapman, 1979; Criado Boado et al., 1991; Galán Domingo and Martín Bravo, 1992; López Plaza et al., 2000; Galilea Martínez, 2010; etc.). In the specific case of western Sierra Morena, the spatial association of megaliths with traditional tracks and roads (drove ways) and natural pathways, analysed on the basis of the topography, has been shown to be statistically significant (Murrieta Flores, 2012; Murrieta Flores et al., 2011; Murrieta Flores et al., 2014). As will be discussed below, the close spatial association of the Cañaveral de León stela with a pathway connecting a number of nearby Copper Age and Bronze Age settlements is consistent with the chronology attributed to the stelae with 'headdress' (also known as 'diademated') of the Iberian south-west, which, for want of precise radiocarbon determinations, are generally dated between the late 3rd and late-2nd millennia BC on the basis of both the morphology of the objects depicted on them, and their spatial associations (Díaz-Guardamino, 2010; Díaz-Guardamino, 2021).

On a more local key, it is worth noting the significance of the discovery of what in fact is the first prehistoric stela ever found in the Huelva province. In this sense, given the high number of related monuments known in the neighbouring Spanish provinces of Badajoz and Sevilla, or in the Portuguese region of Alentejo, to the west of the Guadiana River, not to mention the important series of 'megalithic art' known in megaliths within Huelva itself (for example Soto, El Pozuelo or Los Gabrieles), the discovery of the Cañaveral de León stela puts an end to a true 'anomaly' in the research history of the province. The impact of the discovery in the local and regional media bears witness to this significance.

2. Methodology

In order to achieve the geological characterization and provenancing of the stela, rock splinters detached from its base were embedded in epoxy resin in a 30 mm mold and subsequently polished. This polished section was analyzed on the JEOL JXA-8200 electron probe at the University of Huelva. Several rhyolite porphyry samples of the Bodonal-Cala Complex were petrographically studied. To obtain the thin section images, a Nikon Eclipse LV-100 POL polarizing microscope connected to a Nikon DS-Fi1 camera, with a 5.24-megapixel 2/3-inch sensor, was used. The camera is connected to an Intel Pentium 4 2.66 GHz with the NIS-Elements image capture software.

Various digital imaging techniques were applied to record and analyze the surface of the stela, including SfM 3D modelling, visualization methods for point-cloud-derived DEMs in ArcMap, and RTI (Reflectance Transformation Imaging). These techniques have demonstrated their usefulness in the study of prehistoric rock art (Díaz-Guardamino et al., 2019; 2020; Horn et al. 2019). In this case they have allowed the study of the slab and its surface detail, including the identification of manufacturing marks and carving techniques, the possible production sequence, as well as the identification of various engraved motifs.

Earlier work suggests that Iberian prehistoric sculptures were often decorated with painting, although the evidence for this has been scarce until very recently (Díaz-Guardamino, 2010; Bueno Ramírez et al., 2014; Bueno Ramírez et al., 2015; Bueno Ramírez et al., 2017). In order to determine whether the Cañaveral de León stela was painted or not, four digital image analysis-based methods were applied. Principal Components Analysis (PCA) is a statistical procedure consisting in the elaboration of lineal combinations of pixel values to translate the dataset to a new reference system with perpendicular (uncorrelated) axes, allowing the re-ordination of the obtained bands for a better explanation of the total variance of the image dataset. In short, this technique allows detecting minority elements present in the image, as can be the presence of pigments (Rogerio-Candelera et al. 2011, Rogerio-Candelera et al., 2013, Rogerio-Candelera 2015, 2016). HSI-contrast stretch and HSI-enhanced contrast stretch (HSI-CS and HSI-ECS) are two procedures widely used for every kind of images, from multispectral to radar, also including visible spectrum images (Gillespie et al. 1986). We usually use them in assessing the results obtained by PCA (Rogerio-Candelera et al. 2018), as they allow contrast stretching respecting the appearance of natural colours. Ferric Pigments Index (IPF) (Sebastian López et al. 2013) is a simple band quotient allowing the identification of ferric pigments, originally developed for remote sensing applied to mineral prospection. Finally, algebraic operations between bands were performed, as a way for solving doubts or improving images not satisfactorily enhanced by this battery of methods. The software packages used for implementing these techniques were mainly HyperCube (US Army Engineers Corps, USA) and, in auxiliary tasks, ImageJ in its standard configuration (National Institutes of Health, USA).

Finally, in order to understand the landscape and territorial context of the stela, a series of continuous intensive surveys were undertaken between 2019 and 2020 within a 10 km radius of the location where the stela was found. Given the mountainous nature of the area to be surveyed and the thick vegetation cover across large stretches of it, intensive fieldwalking was undertaken on a number of selected locations, drawing on the experience obtained following previous work in neighbouring areas (García Sanjuán, 1999; Hurtado Pérez et al., 2011a; Hurtado Pérez et al., 2011b; Hurtado Pérez et al., 2011c; García Sanjuán et al., 2011). Wherever necessary, this fieldwork was supported by LiDAR data from the Spanish National Centre of Geographic Information (CNIG in its Spanish acronym)[1], which supplies the LiDAR point coverages produced within the framework of the Spanish National Plan of Aerial Orthophotography (PNOA), with a 6-year periodicity and coverage for the whole of Spain. This fieldwork led to the discovery of 37

[1] http://centrodedescargas.cnig.es/CentroDescargas/catalogo.do?Serie=LIDAR

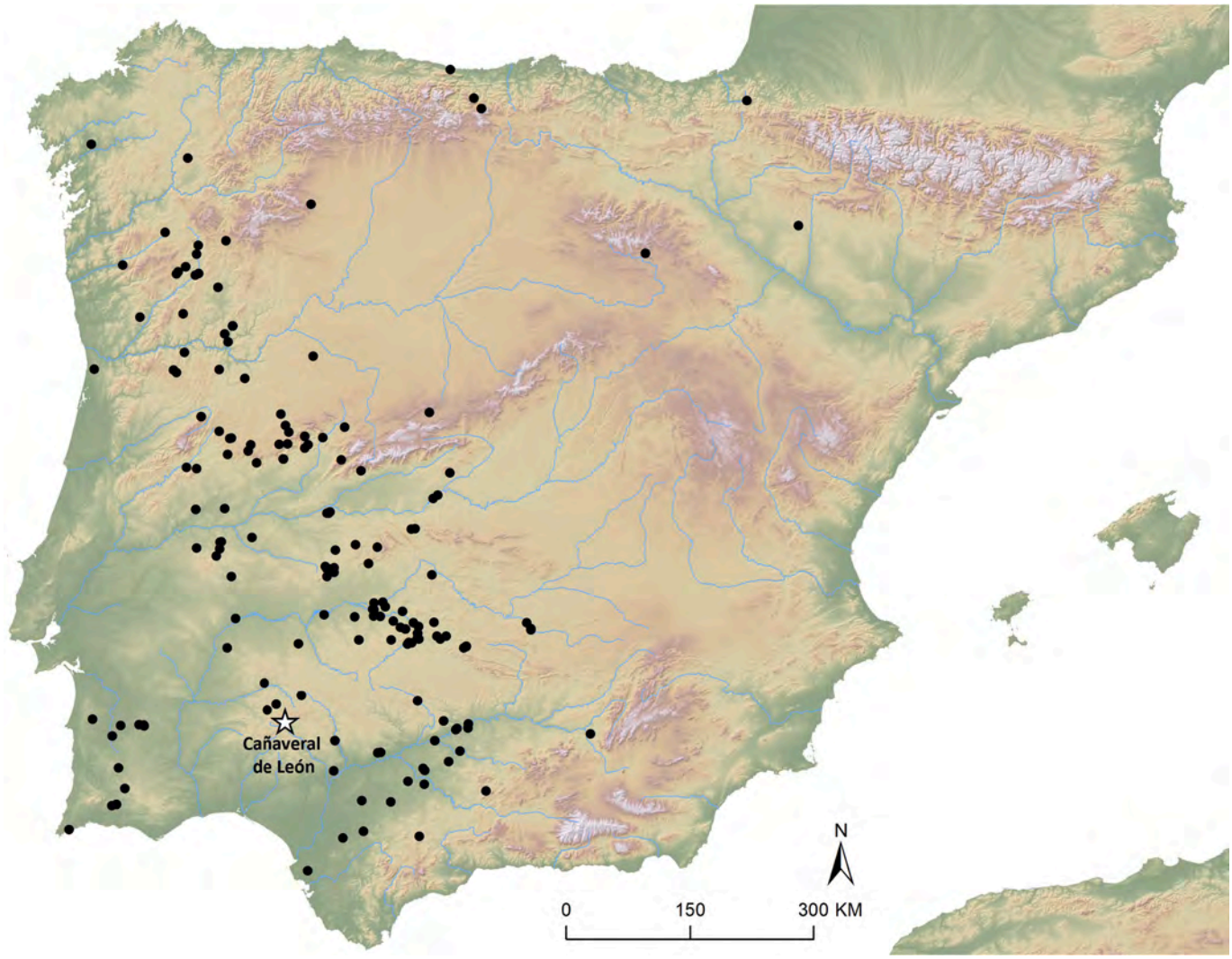

Fig. 1. Distribution of stelae and statue-menhirs attributed to the Bronze Age in Iberia, with indication of the Cañaveral de León stela find spot (white star) in the Southwest. Design: Marta Díaz-Guardamino.

new sites which are described below, including six dated to the Late Neolithic/Copper Age, 12 dated to the Bronze Age, 17 dated to the Iron Age and Antiquity, and 2 to the Middle Age.

3. Geological characterization and provenance

The stone slab of the stela is a pale cream-orange foliated rock in which rounded, gray quartz crystals appear uniformly distributed on the foliation planes. Patchy, dark greenish-gray sericitic zones are also observed on these surfaces. The results show a rock composed essentially of fine to coarse-grained (0.5–3 mm), quartz and feldspar porphyroclasts included in a quartz-sericitic matrix, with biotite, zircon, apatite, magnetite, sphene and ilmenite as accessory minerals (Fig. 2A). The rock has a planar fabric marked by millimeter bands of microcrystalline, essentially quartz-sericitic composition and porphyroclasts with pressure shadows, both characteristic textural features of deformed rock. The engulfed quartz porphyroclasts correspond to previous phenocrysts from a felsic volcanic rock (Fig. 2C). This rock is classified as a foliated rhyolite porphyry.

Petrographic features of the stela are similar to some porphyritic rocks described in the "Capas de Bodonal-Cala" (Hernández-Enrile, 1971) or Bodonal-Cala Complex (Apalategui et al., 1990), a Cambrian volcano-sedimentary complex that extends from Bodonal (Badajoz) to Cala (Huelva). This rocky outcrop stretches along a NE-SW band about 38 km in length and between 1 and 3 km in width. This alignment is located about 8 km (in the shortest distance) to the NE of the place where the stela was discovered (Fig. 3). Geologically, this volcano-sedimentary complex lies in the southern extremity of the Olivenza-Monesterio antiform, in the Ossa-Morena Zone of the Iberian Massif (Fig. 3). It is composed of shales, sandy shales, quartzites, feldspathic greywackes, crystalline tuffs and rhyolitic porphyries interbedded with conglomerates and limestones. This sequence shows important facies and thickness changes. Two phases of Hercynian deformation are superimposed in these rocks evidenced by a penetrative foliation and a subsequent crenulation (Bellido Mulas et al., 2007).

The petrographic study shows that rhyolite porphyries are composed of medium to coarse-grained quartz and feldspar porphyroclasts embedded in a quartz-feldspathic microcrystalline matrix with sericitic bands (Fig. 2B and 2D). These bands constitute the foliation of the rock. The presence of engulfed quartz reveals the volcanic origin of these rocks (Fig. 2D). Oxide, zircon, apatite, tourmaline, muscovite, and sphene are accessory minerals. The mineralogy varies from monomineralic rocks (feldspar tuffs or quartz tuffs) to rocks with different minerals and rock fragments (Eguíluz et al., 1983; Apalategui et al., 1990). These petrographic features are similar to those observed in the polished section of stela. These rocks are referred to as porphyroids in the literature and are interpreted as rhyolitic tuffs. Their foliation pattern favours the natural detachment of blocks with both volumetric

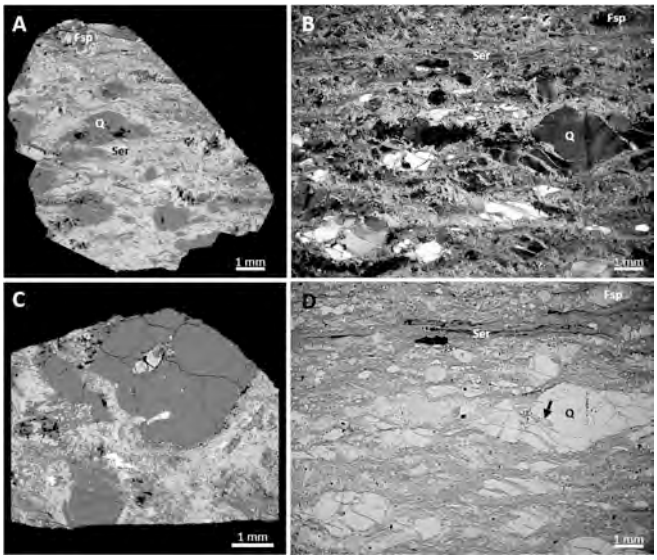

Fig. 2. Petrographic analysis microphotographs. A: Electron Probe Micro Analysis (EPMA) back-scattered electron images of rock splinter detached from the base of the stela; B: Bodonal foliated rhyolite porphyry in crossed polarized light. Sericitic bands determine rock foliation; C: EPMA back-scattered electron images of engulfed quartz in rock splinter from the base of the stela; D: Bodonal foliated rhyolite porphyry in plane polarized light. Arrow indicates an engulfed quartz. Fragmented quartz porphyroclasts in a fine-grained foliated matrix. Legend: Q - quartz, Fsp - feldspar, Ser – sericite. Design: Teodosio Donaire Romero.

and morphological characteristics analogous to that observed in the stela, without requiring a complex extraction process.

Although two types of porphyroids are distinguished, namely "Bodonal porphyroids" (central and northern sectors of the alignment) and "Cala porphyries" (towards the south of the alignment), the rock of the stela is comparable to the Bodonal porphyroids, since the Cala porphyries show very coarse-grained (>3 cm) alkaline feldspar phenocrysts, smaller plagioclase and quartz phenocrysts and have poorly penetrative foliation. These "Bodonal porphyroids" constitute one of several lithotypes described in the 38 km long Cala Bodonal Complex.

Rocky outcrops similar to the material used in the manufacture of the Cañaveral de León stela were detected by us only near Bodonal de la Sierra, about 15 km to the north of the stela findspot (Fig. 2). Although comparable acidic orthogneiss have been described in other sectors of the Iberian Massif, these rocks are very rare in the Iberian south-west. Being essentially composed of medium to coarse-grained quartz and feldspar porphydoclasts embedded in a very fine-grained matrix, this rock has physical and textural characteristics that provide great hardness and resistance, very suitable for the manufacture of a monumental sculpture intended to be exhibited on an open-air location. In addition, its resistance makes it suitable for long-lasting engravings.

In short, the geological examination reveals that the Cañaveral de León stela was manufactured on a porphyroid block probably transported over a distance of 15 km from the north, using a suitable outcrop that provided naturally-detached regular blocks with the desired characteristics of size, colour and hardness for a monumental sculpture intended to last while exposed to weathering.

4. Morphology, iconography and chaîne opératoire

The stela has a generally rectangular shape with a semicircular finish and two large lateral notches in the upper part, which endow it with a vaguely anthropomorphic look (Fig. 4). Its lower part has a 'fresh' fracture, revealing a late break. The preserved portion of the slab is 19 cm thick, 63 cm wide and 95 cm high, with a weight of 239 kg. Based on the stela of Granja de Toñinuelo, found some 50 km to the north, in the Badajoz province (Leisner, 1935), which has a similar width and seems to preserve its original length (138 cm), the stela of Cañaveral could have weighted up to 350 kg or even more (Fig. 5).

Added to the procurement of the porphyroid block, the *chaîne opératoire* (Fig. 6) of manufacture of the stela involved two main stages: creation of the slab, and surface decoration. Each of those two stages included various steps. The process can be described as follows. Firstly, the creation of the slab involved two steps: slab shaping and surface finishing. In terms of shaping, numerous and possibly primary levelling marks, most probably produced with a large lithic hammer, are visible on the lateral, upper sides and reverse of the slab (Figs. 4 and 5, see also RTI files downloadable here https://doi.org/10.15128/r2n870zq837). This shaping work, which includes the making of two lateral notches, endows the block with a vaguely anthropomorphic shape. As for the surface finishing, on the sides there are two flat surfaces parallel to each other, but slightly oblique to the obverse and reverse surfaces of the stela; they seem natural foliation planes. Otherwise, the surfaces of the sides and the back are rough, displaying no fine finishing work of regularization or abrasion. The frontal, decorated face, which could have been originally a foliation plane, has a relatively fine and careful finish, possibly created through abrasion with a lithic tool, as RTI visualization suggests, even if few direct traces of this process are preserved (for evidence from other stelae and a replication experiment see Díaz-Guardamino et al. 2019; 2020; Díaz-Guardamino, 2021).

Secondly, the decoration of the surface involved painting, pecking and groove abrasion. As we explain in the following section, the surface was treated with red pigment. Then, a series of motifs were carved through pecking, subtle traces of which are preserved. This was possibly achieved with a lithic tool, as marks are similar to those seen in petroglyphs from Neolithic rock art traditions or replication experiments - see e.g. NA, 2010; Jones et al., 2011. Nonetheless, most of the marks produced through the original carving were lost, as the grooves were mostly abraded (Figs. 4 and 7). All the grooves composing the different motifs have a similar surface texture (slight marks of pecking and abrasion), except for the irregular horizontal lines crossing the face at the height of the nose (Figs. 4, 5, and 7). Furthermore, most of the grooves have the same width (16–17 mm), except for some of the grooves making the 'comb', the 'brooch' and the V motif on the shoulder of the anthropomorphic figure, which have smaller widths (c. 12–14 mm) (Fig. 5). All this indicates that, probably, most motifs were executed as part of the same project, being the V motif and the face marks possible later additions.

The carved motifs can be described as follows:

- Anthropomorphic figure composed of the outline of a head with a schematic face (outline of ears, eyes and nose; irregular horizontal lines to both sides of the nose, probably carved in a second phase), departing from the head two thick lines depicting the upper limbs (including the left hand, with carved lines as fingers; the other hand was lost through the fracture of the stela), a necklace and oval body with reticulated dress or armour (Figs. 5, 7A). Two small lines and a possible zig-zag are found in the area of the shoulders and the necklace but their interpretation is difficult; perhaps they were other elements of dress. They seem to have been carved at a later stage;
- Two concentric semicircles/ovals are carved over the head (Fig. 7A). This could be the schematic representation of a possible headdress;
- Above the headdress and perpendicular to it there is a vertical line whose interpretation is undetermined;
- To the left of the concentric semicircles there is an elongated element whose interpretation is undetermined (A handle? A possible second 'brooch'?)
- At neck level, to the right, there is a circle and some neighbouring carvings to the upper left side (i.e. two small contiguous lines and, perpendicular to these and the circle, two contiguous cup marks), composing the image of a possible mirror with handle (Fig. 7C);

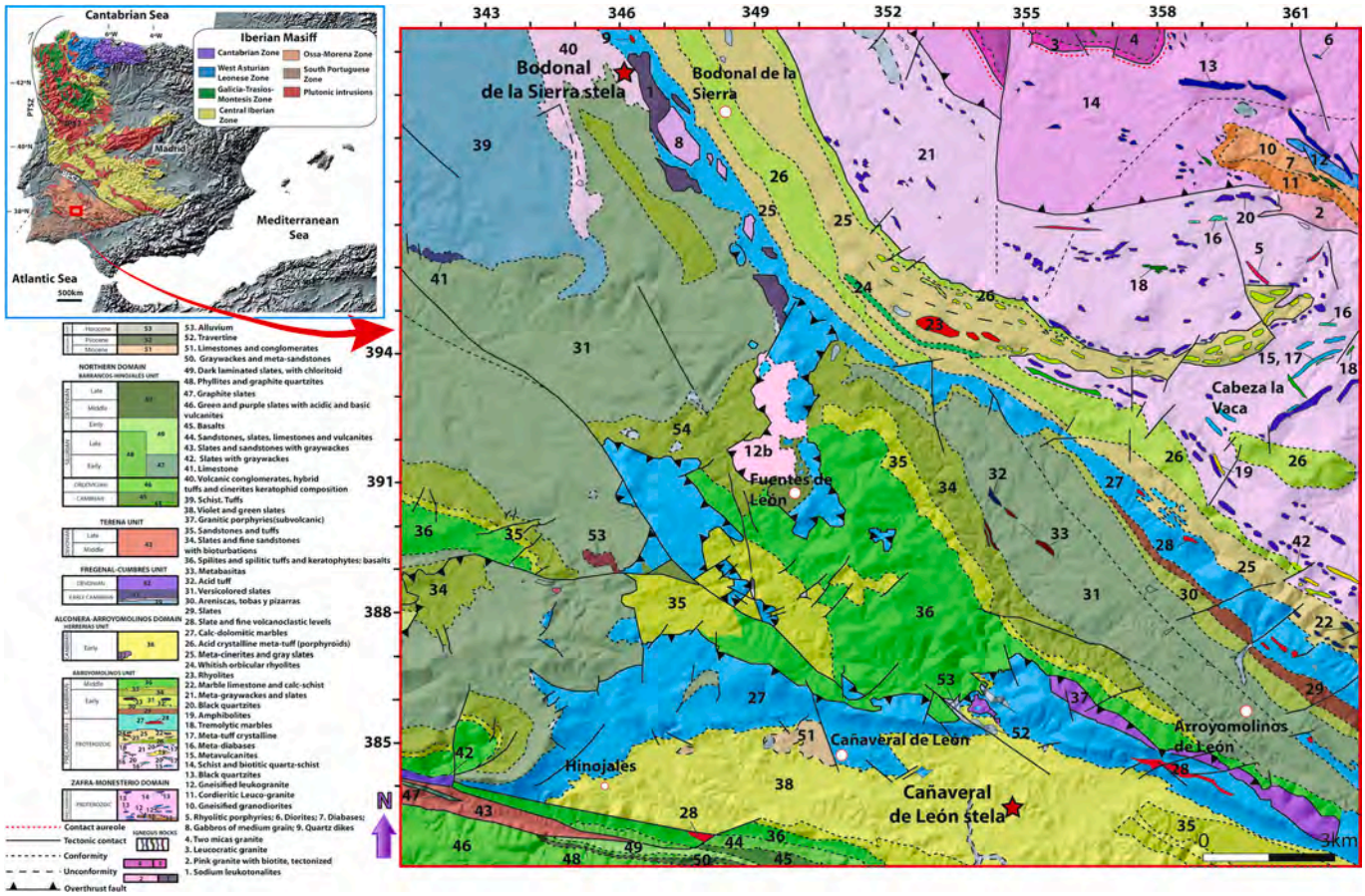

Fig. 3. Left: Synthetic geological map of Iberian Peninsula after the "Geological map of Spain with the inclusion of continental Portugal. Scale: 1:2.000.000 (Vera, 2004); Right: Geological map of the study area, modified from the Instituto Geológico y Minero de España (IGME). The geology is overlain on a digital terrain model based on public domain data by the Centro Nacional de Información Geográfica. The red stars correspond to the location of the Cañaveral de León and Bodonal de la Sierra stelae. Design: José Antonio Lozano Rodríguez.

- Under the hand of the anthropomorphic figure there are some eroded carvings whose interpretation remains undetermined (Possible container, i.e. bag?)
- To the left, at shoulder height, there is the carved outline of a triangular element. Inside the triangle there is a curve closing the area of the smaller angle. Similar elements are commonly interpreted as a brooch or fibula;
- To the left, at the level of the forearm, there is a rectangular element composed of five, possibly six, vertical lines, which are finished off in the upper part by a horizontal line. This type of element could be a comb;

Determining the carving sequence is difficult in the absence of clear superimpositions. Nonetheless, the intersections of lines yield relevant information worth mentioning: (1) the first to have been carved seems to be the outline of the arms, including the index finger, and their connection through the neck; (2) attached to this the outline of the head, nose and the remaining fingers are carved; (3) this is followed by the carving of the ears, necklace with associated horizontal lines; (4) the oval dressed body is carved, first by the carving of the outline and central line, then by the carving of the different horizontal lines, from left (departing from the left outline and central line) to right; (5) all the other motifs ('headdress', 'mirror', 'brooch', 'comb', etc.) could have been engraved during or after the completion of the human figure. The inner semicircle of the headdress seems to have been executed from left to right, while the exterior was executed from right to left.

These motifs show stylistic traits that find numerous parallels in stelae with 'headdresses' from western and southwestern Iberia (Fig. 8) (Díaz-Guardamino, 2010: 129–291). Firstly, stylistically the hand of the Cañaveral de León stela is very similar to the ones depicted on the Granja de Toniñuelo one, in Badajoz, and in the 'pebble stelae' group from northern Extremadura and Salamanca. The schematic representation of the face in Cañaveral finds its closest parallels in the 'pebble stelae' (e.g. Hernán Pérez 1 and 2) from northern Extremadura too. The vertical element documented on the headdress of the Cañaveral stela also finds a unique parallel in the Nave 2 statue-menhir, in the North of Portugal. On the other hand, the stylized 'headdress' of the Cañaveral stela finds its closest parallels in southern Extremadura, in examples such as Capilla 1 and Belalcázar. The arrangement of the motifs (e.g. possible mirror, brooch, etc.) on the decorated surface closely resembles that found on stelae such as Torrejón Rubio 2, in northern Extremadura ('comb' and 'fibula') and in Capilla 1, in southern Extremadura (element under the left hand). Finally, the style of the body of the Cañaveral de León example sits between the three-dimensional bodies represented by the so-called 'pebble stelae', in northern Extremadura, and the stylized bodies of the 'headdress' (or 'diademated') stelae from Badajoz, in southern Extremadura.

A trait of the Cañaveral de León stela worth noting is that the decoration is carved on a flat surface, like in the stelae of Granja de Toniñuelo (Badajoz) and Torrejón Rubio 2 (Cáceres), as well as in the stelae with 'headdress' considered to be more recent, that is, from the Late Bronze Age (e.g. Capilla 1, Belalcázar). Despite this, in the cases of Cañaveral de León and Granja de Toniñuelo, the engravings and the slab are combined in a way that endows an anthropomorphic and three-dimensional flair to the slab.

Another aspect of great interest is that both the Cañaveral de León

Fig. 4. 3D model of the Cañaveral de León stela. Available in Sketchfab at https://skfb.ly/opWnK. Design: Marta Díaz-Guardamino.

and the Torrejón Rubio 2 stelae, include motifs that are typically found in Late Bronze Age 'warrior' stelae, interpreted as combs, brooches and mirrors. Also, the position of the representation of the 'brooch' and/or the 'comb' next to the shoulder or arm is typical of 'warrior' stelae (e.g. Solana de Cabañas, Ervidel 2, Monte Blanco, Esparragosa de Lares 1, Cabeza de Buey 3, Fuente de Cantos, Alamillo, Almargen, El Coronil, Ecija 1, Ategua) (Díaz-Guardamino, 2010: 327–414). Finally, the possible 'mirror' of the Cañaveral de León stela is strikingly similar to some represented on stelae of the Guadalquivir valley (e.g. Écija 1, Pedro Abad, Ategua) or South Portugal (Ervidel 2) (Díaz-Guardamino, 2010: figs. 199–200).

5. Pigment identification

Concerning the front side of the stela, the correlation matrix shows that the three bands are highly correlated. This justifies the use of PCA as an exploratory tool to verify the presence of pigments. Nevertheless, the new bands obtained are not conclusive enough. Maybe, in the band corresponding to the second Principal Component the presence of a set of pixels with DNs tending to 255 (white) (Fig. 9A) can be detected. The characteristics of PCA technique —which maps the recalculated pixel values according to their vicinity to the new axis of the coordinate system built using their eigenvalues—allow detecting elements masked

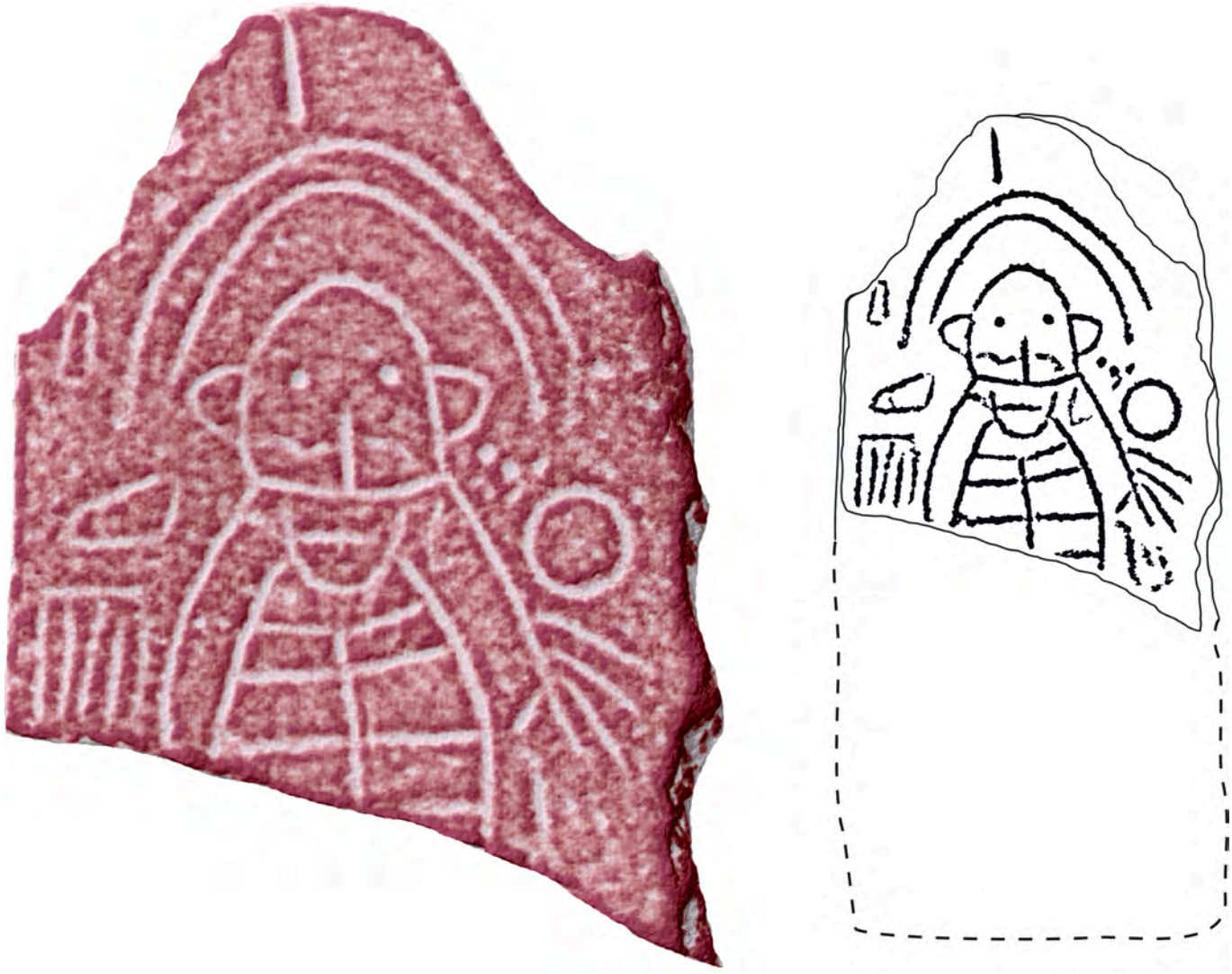

Fig. 5. To the left an improved visualization of the 3D topography of the decorated face of the stela of Cañaveral de León (63 cm wide) using GIS tools and a colour ramp in red to emulate the effect of the use of pigments and subsequent carving. To the right the interpretative drawing of the carved motifs (obtained through GIS tools and edited with Corel PhotoPaint) and hypothetical reconstruction of the slab before fracture (taking as a reference the stela of Granja de Toniñuelo). Design: Marta Díaz-Guardamino.

in highly correlated images. Among these elements is the paint, particularly the one showing similar tones to those of the supporting rock. A wide bibliography illustrating this subject is available (as examples: Rogerio-Candelera et al. 2011, Rogerio-Candelera 2015, 2016). Consistent with the obtained results, false colour images elaborated using the three PCA bands allow distinguishing several tones on the surface of the stela, which are defined as equivalent to a digital classification (Rogerio-Candelera et al. 2011). If in this case the greenish tones are predominant, there are areas in which these tones are brighter, particularly on the front side of the stone with the engraved surface.

The performance of HSI-CS evidences reddish tones, present in most of the engraved area in the obverse of the stela (Fig. 9B). These can be interpreted as part of an intentionally applied layer, otherwise be related to the surface composition of the rock in which the stela was carved, or even can be related to the oxidation of ferric compounds due to temperature and/or the effect of heat and extreme dryness in a process commonly known as 'flushing'. This technique allowed likewise watching in light tones the presence of recent scratches (generally of lower depth than the original carvings), probably caused by the process of extraction of the stela from the place in which it was slightly buried, or by the manipulation of the stela in the very first moments of the finding prior of the detection of the carvings.

The results of the IPF are shown in Fig. 9C. White pixels appear almost entirely on the upper surface of the engraved face (albeit not in the whole extension), but are absent in the cut areas of the rock (upper right corner, or lower area of the image, for example). These white pixels constitute the answer to this digital image analysis technique and, consequently, they should be interpreted as ferric in nature. IPF also allows perceiving reddish areas interpretable as being of a ferric nature.

The application of HSI-ECS technique does not add any substantial improvement to the visualisation of the stela.

The combined results of PCA, HSI-CS and IPF suggest the presence of a surface reddish layer compatible with the deliberate application of pigments in the obverse of the stela. This point could be corroborated by means of XRD analyses of samples both of the area compatible with pigment layer and the non-compatible area. For the time being this technique has not been considered due to its destructive character.

Two digital image analysis techniques were used for the study of the reverse side of the stela: decorrelation by PCA for the elaboration of false colour images which would let to appreciate possible painted patterns (Fig. 9D); and contrast stretch by HSI-CS, to reinforce the original colour and thus allow distinguishing possible artefacts generated by the

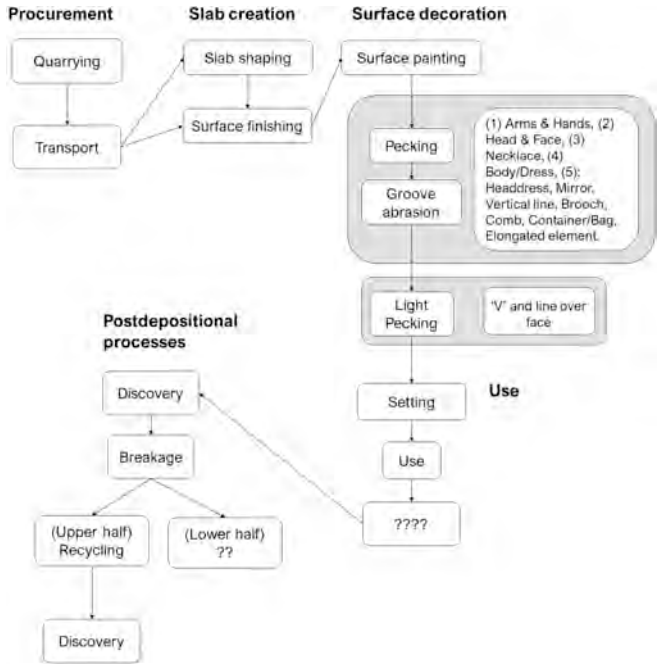

Fig. 6. Chaîne opératoire and biography of the stela of Cañaveral de León. Design: Marta Díaz-Guardamino.

application of PCA. The results obtained by HSI-CS do not permit to ensure that in this face could be any kind of pigment deliberately applied. Fig. 9D shows the results of one of the images used, displaying both the stains attributed to the action of lichens and the rock texture.

In summary, a red painted layer is detected on the front side of the stela based on two kinds of evidence: a ferric pigments index as described by Sebastián López et al. (2013), which is in fact similar to the one described by Segal (1982), and the ratio red/blue bands used in several papers devoted to geological prospection by remote sensing (e.g. Ducart et al. 2016, Pour et al. 2019). The ferric pigments index shows a positive result with a large amount of pixels in the outer, unaltered part, of the engraved face of the stela, whereas there is a lack of a positive signal (bright pixels) to this same index in the eroded areas of the engraved face of the stela (obverse of the stone), as well as in the reverse face, even with a composition of the stone in which iron oxides/hydroxides are present (in all the rock, and not only in the surface). These two clear responses to the same test seem to be enough to define an intentionally applied surface treatment or pictorial layer.

6. Landscape context

Unlike most Iberian prehistoric sculptures, the exact find spot of the Cañaveral de León stela has been established accurately: it was found embedded in the floor of Las Capellanías rural road. The pit in which the stela was buried did not yield any archaeological materials, nor were architectural features, such as walls or floors, observed. However, it is important to note that these observations were made by the workers who found it, and not by trained archaeologists. After a thorough, albeit non-formal, survey, no archaeological material was found in the immediate vicinity either. Some 350 m to the north-west, a cluster of at least 4 cist burials (most likely dating to the Early and Middle Bronze Age, as is customary with this kind of structures) was identified, which is the nearest known archaeological feature to the stela find spot (other than the road itself, of course).

One preliminary problem is whether the location where the stela was found represents its primary position (where it was erected when it was first made), or a secondary one (to which it was transported later on). After discussing this point with the workers and staff of the city council, the possibility that the stela had ended up in the road as part of the infill used in an earlier maintenance work carried out in 2008 was raised. Two sites were cited as sources of gravel and earth for the infilling of the road on that occasion, one of them on the eastern bank of the Rivera de Montemayor river, some 800 m to the south-west of the find spot, and the other just half a kilometre to the west of the crossroads between the road A-5300 and Las Capellanías pathway. Both places were surveyed, and nothing was found in them. In addition, the operator of the bulldozer that extracted the infill from both sites informed us that not only did he not remember loading a stone of that size, but that, had he found it, he would have discarded it as it would have been oversized for the purpose of the maintenance work being undertaken. These findings are not conclusive, but in principle they suggest that the stela was not incorporated into the fabric of Las Capellanías road as part the previous works undertaken in it. This, of course, does not mean that the stela may not have been incorporated into it from a primary location at an earlier stage. In summary, neither possibility can be ruled out, which is in itself quite interesting since, as will be discussed below, association to pathways is a recurrent theme in the study of Iberian prehistoric monumental sculptures.

The stretch of Las Capellanías where the stela was found lies at a short distance (640 m) from (and runs in parallel with) the Rivera de Montemayor river, which springs out at the Sierra de la Pedrera, in the municipality of Fuentes de León (Badajoz), 13 km to the north. This sierra is important from a geographic point of view, as it marks the watershed between the Guadiana and Guadalquivir river basins, to the north and south respectively. The Rivera de Montemayor is a tertiary-order river, as it tributes to the Rivera de Huelva, itself a tributary to the Guadalquivir, which empties to the Atlantic Ocean. Today, most of the lower course of the Rivera de Montemayor is covered by the Aracena water reservoir.

Between the late 1980s and early 1990s, the University of Sevilla carried out a research project centred on the Copper Age and Bronze Age settlement patterns across western Sierra Morena, with a special focus on the upper and middle course of the Rivera de Huelva river. As part of that project, surface surveys were carried out, which led to the discovery of numerous new sites, including two Bronze Age settlements, La Papúa II and El Trastejón, which were then excavated (García Sanjuán, 1999; Hurtado Pérez et al., 2011a; Hurtado Pérez et al., 2011b; Hurtado Pérez et al., 2011c; García Sanjuán et al., 2011). However, the municipality of Cañaveral de León was not included in that project. The surveys undertaken by us in 2019 and 2020 have led to the discovery of several new sites, providing a more accurate picture of the late prehistoric occupation across the region. In total, 37 new sites have been discovered in the last two years, including six dated to the Late Neolithic/Copper Age, 12 dated to the Bronze Age, 17 dated to the Iron Age and Antiquity, and 2 to the Middle Age. This, of course, can also be connected with the results of earlier work. Altogether, the inventory of prehistoric sites now documented within a 10 km radius of the stela findspot includes 20 sites (Table 1 and Fig. 10), revealing an intense occupation of the area between the 3rd and 2nd millennia BC.

Of unspecified dates within the Late Neolithic and Copper Age are several megalithic monuments which, counting only those along the Rivera de Montemayor valley, include La Papúa, Montecosta I-IV, Montecosta II, Montecosta, Palancar, Valdelinares, Naranjero and Coquino, as well as four settlements, including Cerro Librero, La Sabia, La Toba I and La Toba II. The dolmen of La Papúa is particularly interesting on account of its proximity to Las Capellanías pathway and La Papúa II Bronze Age settlement (described below).

About 2.8 km upriver from the stela find spot lies the Fuentes de León cave complex, which includes El Agua, Los Postes, Los Caballos, La Lamparilla and Masero caves as well as two sinkholes, Sima I and Sima Cochinos. At Los Postes, where occupation dating to the Upper Paleolithic and Mesolithic has been recorded, significant burial deposits have been found which, according to two radiocarbon determinations (one on human bone) date to the Copper Age (Collado Giraldo et al., 2015).

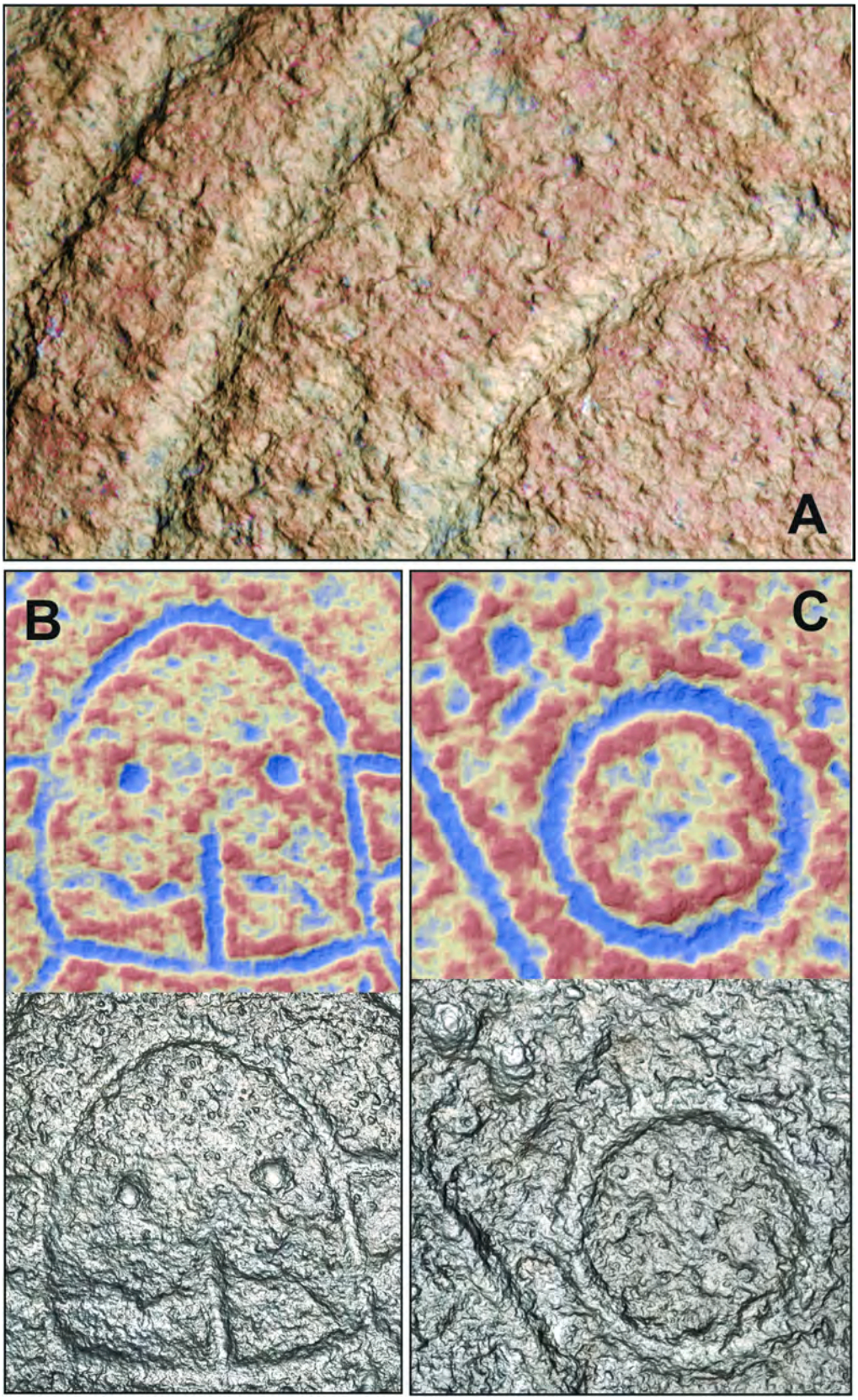

Fig. 7. RTI snapshots with different filters and improved visualizations of the 3D topography of the stela surface. A: View of the headdress area with the Diffuse Gain filter, where remains of red pigments can be seen; B: View of the face and C: view of the representation of the mirror: DEM visualization (top) Specular Enhancement (bottom). Design: Marta Díaz-Guardamino. The RTI datasets can be downloaded here https://doi.org/10.15128/r2n870zq837.

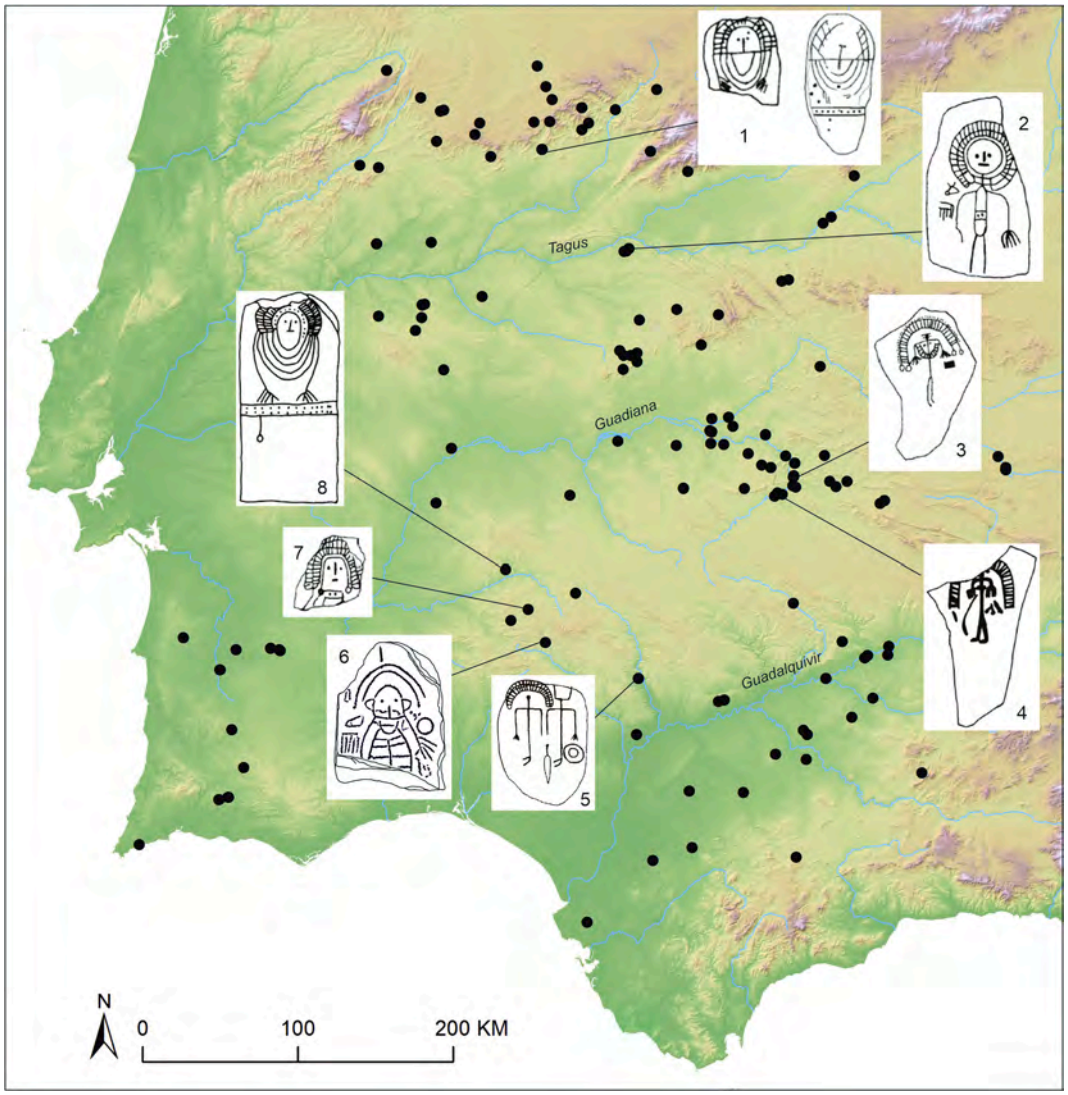

Fig. 8. Distribution of stelae and statue-menhirs attributed to the Bronze Age in southwestern Iberia, with drawings of the stelae with headdress mentioned in the text (not to scale): 1: Hernán Pérez 1 and 2; 2: Torrejón Rubio 2; 3: Capilla 1; 4: Belalcázar; 5: Almadén de la Plata 2; 6: Cañaveral de León; 7: Bodonal; 8: Granja de Toniñuelo. Design: Marta Díaz-Guardamino.

A substantial number of sites date to the Bronze Age, including settlements such as La Papúa II, La Bujarda, Las Pedreras[2] and Alto de la Jabata, as well as clusters ('necropolises') of cist burials like La Papúa I, Mari Vázquez, Camino de la Víbora, Chamorro, Bonales, La Torera, Jabata, Alto del Gato, Montecosta V y VI, Coquino II, El Chorrito and Cerro Librero II. The two nearest settlements are La Papúa II and Las Pedreras, 6.53 km and 3.23 km away from the stela find spot, respectively (Fig. 11). La Papúa II is a large-sized settlement covering c. 15 ha, divided into two sectors and surrounded by a major stone-walled enclosure 3 km in perimeter with preserved heights between 1 and 2 m, and widths between 1 and 1.5 m—at the eastern entrance the preserved height is 3 m, with width up to 2 m. Excavations undertaken in 1994 revealed abundant evidence of domestic activity, which, according to the only available radiocarbon determination, dates to 2120–1880 cal BC 2σ (Early Bronze Age) (Hurtado Pérez et al., 2011b). This settlement sits on a highly strategic position, controlling both the Rivera de Huelva and La Papúa valleys, as well as the pass between them along the Las Capellanias pathway, which runs alongside the Rivera de Montemayor. Like La Papúa II, Las Pedreras was first described in the monograph resulting from the University of Sevilla Project mentioned above (García Sanjuán et al., 2011). The additional survey data obtained in the last two years, including a LIDAR plan of the settlement, reveal a stone-walled outer enclosure with a maximum diameter of 757 m, and 0.18 ha in extension—which is slightly bigger than the first estimate García Sanjuán et al., 2011: 300). The LIDAR survey reveals up to five semi-circular structures along this wall, which, given their spacing, size and morphology, may be 'bastions' reinforcing the perimetral wall at specific points. Inside the outer enclosure, and at the hill's highest point, a second stone wall encloses an oval-shape building on a levelling terrace, about 165 m^2 in size. The site's morphology, the building technique used for the walls and terraces and the surface finds, all point to a Bronze Age occupation. Las Pedreras also lies at a strategic position, controlling, together with La Papúa II, the north–south mobility along the Las Capellanías pathway, which, as mentioned above, here also runs in parallel to the Rivera de Montemayor.

In keeping with the presence of major Bronze Age settlements, the area where the Cañaveral de León stela was found presents several clusters of cist burials. Only alongside the middle and lower course of the

[2] This site is referred to with different names in different publications: Alto Pipeta (Pérez Macías, 1997: 11), Las Pedreras (García Sanjuán et al., 2011) and Alto del Gato (Romero Bomba, 2007) In this paper we shall refer to it as Las Pedreras, as it is the term used by us in earlier work.

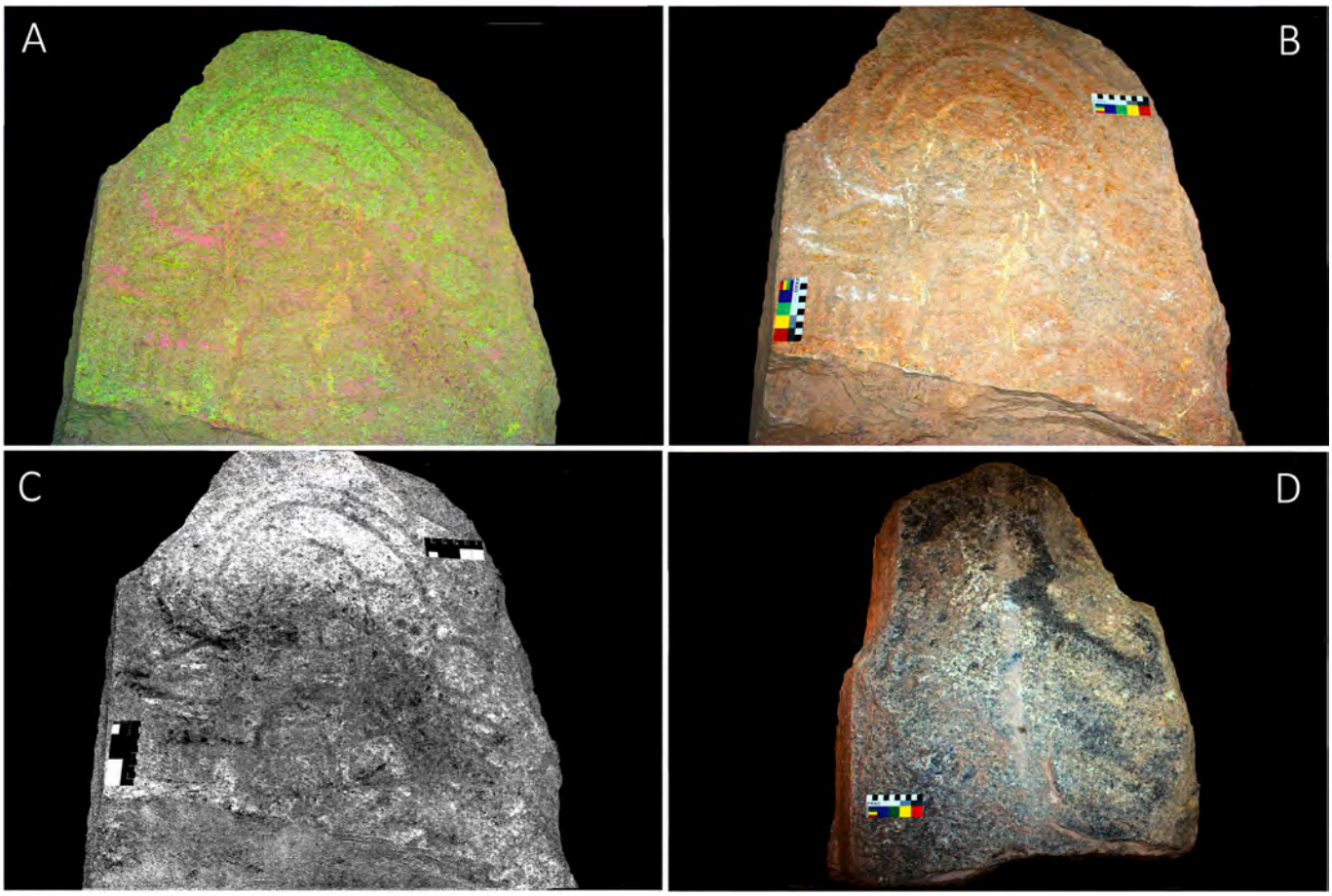

Fig. 9. Pigment analysis. A: False colour image elaborated using the three bands obtained by PCA, combination 123, of the image 6040; B: Image enhancement by means of HSI-CS of image 6052; C: Results of applying IPF to image 6052; D: Image enhancement by HSI-CS of one photograph of the reverse side of the stela. Design: Miguel Ángel Rogerio Candelera.

Rivera de Montemayor, most of which is currently flooded by the Aracena dam, five are known, including La Papúa I, El Chorrito, Cerro Librero II, Coquino II and Monte Costa V. La Papúa I cists are relevant for the study of the stela. Located 570 m to the north of La Papúa II, and 1230 m to the east of Las Capellanías as the crow flies, they were excavated in the 1970s by Mariano del Amo y de la Hera, then director of the Huelva Museum, but never published. Years later, a general description of the finds kept in the museum for cists #1 to #5 was published (Pérez Macías, 1997). The grave goods recorded in cist #2 are remarkable, as they include a hemi-spherical bowl, a copper dagger with three rivets, two spiral silver bracelets and an elongated silver foil described by the excavator as a 'diadem' (Fig. 12A). This possible diadem, 10 cm in length and decorated with two rows of 'repousse' dots, is quite a special object (Fig. 12B). Together with the one found in hypogeum #9 at Alcaide (Antequera, Málaga), represents the only artefact outside the so-called 'Argaric area', in the Spanish south-east, that has been described as a 'diadem'. Regrettably, no human bones were retrieved at La Papua I cist #2, as is common in the region because of high soil acidity (Manuel Valdés et al., 1998). Therefore, it was not possible to ascertain whether the 'diadem' was placed on or near the skull of the individual buried in it. Neither the 'diadem', nor the rest of the artefactual assemblage retrieved from the tombs at La Papúa II have been studied thoroughly to this date.

Within the context of 'Argaric' society it is generally assumed that these diadems, of which to this date only eight examples are known (found at sites like El Oficio, Gatas, Fuente Álamo, El Argar or La Almoloya), were worn over the head, or forehead, as a symbol of distinction, status and power, by some people (specially women) belonging to the elite (Lull Santiago, 1983; 205-207; Lull Santiago et al., 2021). Therefore, although 'Argaric' diadems are larger and more complex in morphology (sometimes with an 'almond' shape appendix protruding from the central part of the main body), it is worth stressing the remarkable fact that the Cañaveral de León stela, depicting an anthropomorphic figure portrayed with 'headdress' (often described as a 'diadem') was discovered barely 6.4 km from a Bronze Age burial containing one of the (extremely) rare examples of 'diadems' —and the only possible one known to date in the entire western half of Iberia. Furthermore, this tomb with a silver 'diadem', is spatially associated to La Papúa II, one of the largest and most impressive Bronze Age settlements in the Spanish south-west. Obviously, this adds to the importance of the site and, more generally, the area, during the 2nd millennium BC.

Although testimonies of Iron Age occupation are very scarce and poorly understood, the area comprised within a 10 km radius from the Cañaveral de León stela presents abundant evidence of occupation in Antiquity and the Middle Age. Among the latter, it is worth mentioning Castillo del Cuerno, located on the Sierra del Castillo, next to the Rivera de Montemayor river, and sitting on a hilltop that enjoys a strategic position, not unlike some of the Bronze Age settlements mentioned above, such as La Papúa II and Las Pedreras. Castillo del Cuerno is relevant to understand the territorial and landscape context of the stela because, on the basis of the analysis of medieval written sources, it has been identified as one of the *hins* ('stops', 'stations' or 'forts'), mentioned by Al-Idrisi in the 'itinerary' between Sevilla and Badajoz (Gibello Bravo, 2007). As will be discussed below, this itinerary is quite important to understand the prominent historical role played by Las Capellanías within the context of the road network in south-west Spain.

Table 1
Copper Age and Bronze Age sites known within a 10 km radius of the Cañaveral de León stela. NE (Neolithic); CA (Copper Age); BA (Bronza Age); IA (Iron Age).

Site	Type	Period	Source	Distance to Stela (m)	Distance To Las Capellanías (m)	Main Bibliographic Reference
Mari Vázquez	Cist cluster	BA	Survey	350,49	254,77	This paper
Nogalejo	Megalith	CA	Survey	2567,06	1970,20	This paper
Alto del Gato	Cist cluster	BA	Survey	2908,97	800,68	This paper
Fuentes de León	Cave complex	NE/CA	Excavation	3139,35	264,092	Collado Giraldo et al., 2015
Las Pedreras	Settlement	BA	Survey	3179,08	762,88	García Sanjuán et al., 2011
La Toba II	Settlement	CA	Survey	3663,47	3297,08	This paper
Castillo del Cuerno	Settlement	IA	Excavation	3810,27	1248,27	Menéndez Menéndez et al., 2016
La Toba I	Settlement	CA	Survey	4087,36	3602,26	This paper
Chamorro	Cist cluster	BA	Survey	4356,46	3512,30	This paper
Alto de Jacaco	Settlement	CA	Survey	4454,24	2683,13	Rivera Jiménez, 2001
Mala Pasá	Landmark	?	Survey	4571,32	286,03	García Sanjuán et al., 2011
Membrillar	Cist cluster	BA	Survey	5065,93	1429,38	This paper
La Papúa III	Megalith	CA	Survey	5753,11	180,20	García Sanjuán et al., 2011
La Papúa I	Cist cluster	BA	Excavation	6473,69	1346,95	Pérez Macías, 1997
La Papúa II	Settlement	BA	Excavation	6802,89	962,90	Hurtado Pérez et al., 2011b
Cerro Librero I	Settlement	CA	Survey	7036,91	273,48	García Sanjuán et al., 2011
Montecosta I	Megalith	CA	Excavation	7218,04	559,29	García Sanjuán et al., 2011
Montecosta II	Megalith	CA	Survey	7700,00	1069,27	García Sanjuán et al., 2011
Montecosta III	Megalith	CA	Survey	7719,76	915,76	García Sanjuán et al., 2011
Montecosta IV	Megalith	CA	Survey	7831,92	805,15	García Sanjuán et al., 2011

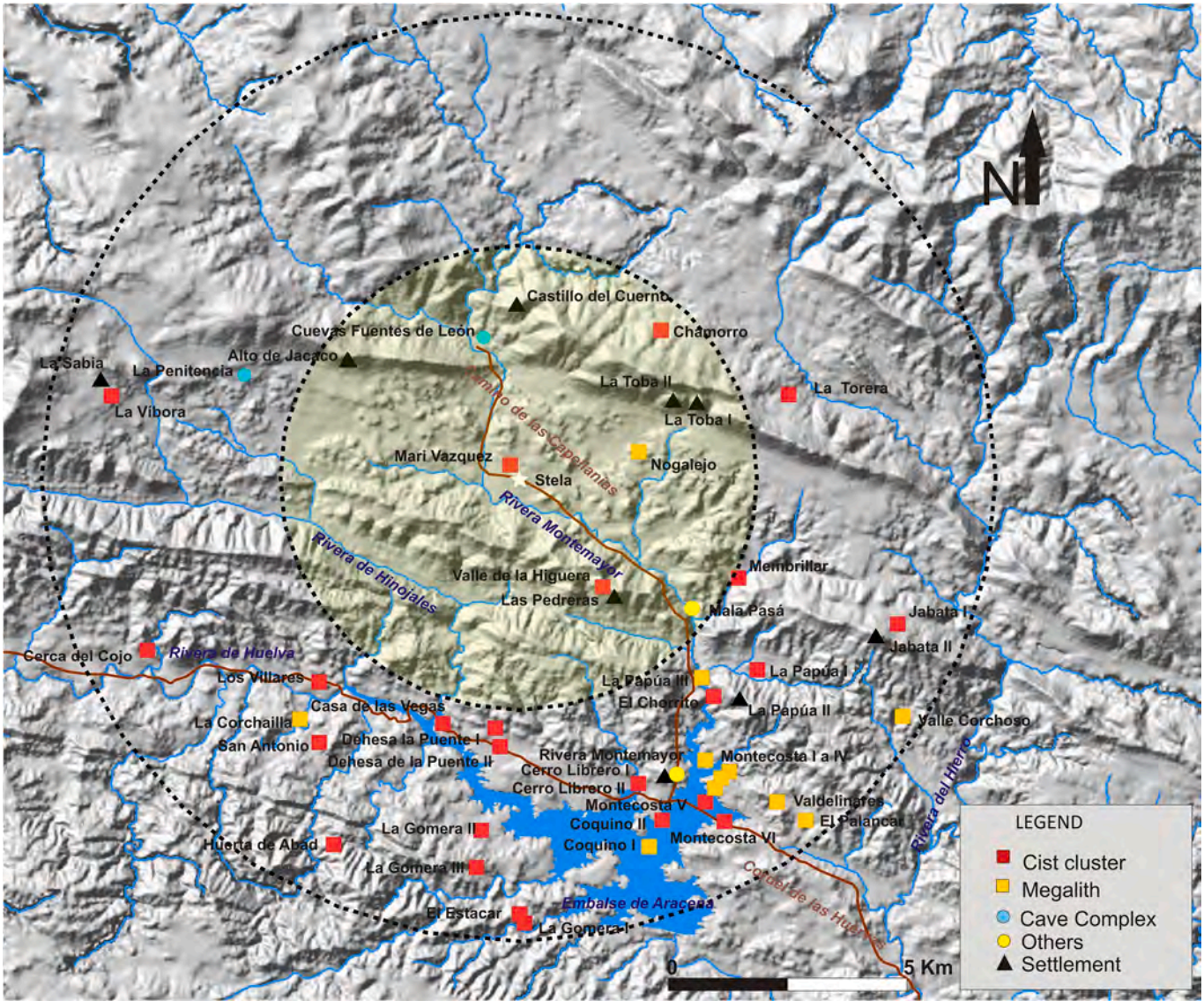

Fig. 10. Distribution map of sites within 5 and 10 km radiuses around the Cañaveral de León stela find spot. Design: Timoteo Rivera Jiménez.

Fig. 11. Main Bronze Age settlements in the vicinity of the Cañaveral de León stela find spot. Left column: LIDAR plan, walled features and materials from La Papúa II. Right column: LIDAR plan, walled features and materials from Las Pedreras. Design: Timoteo Rivera Jiménez.

In summary, the territorial background of the stela does not differ substantially from the settlement patterns identified some years ago for the Rivera de Huelva valley—cf. discussion in García Sanjuán et al., 2011. This pattern is based on Copper and Bronze Age hill-top settlements sitting on the main mountainous alignments and, depending on the chronology, megalithic monuments and clusters of cist burials located in their proximity, on lowlands, normally within visibility range from the villages.

7. Discussion

The study described above provides various kinds of evidence to understand the newly discovered Cañaveral de León stela, while at the same time contributes to expand the existing knowledge concerning the settlement patterns, territorial dynamics and landscape affordances within the area surrounding it, and in western Sierra Morena more generally, especially in the Copper and Bronze Age. The results obtained open up new ways to approach a series of old themes in Iberian prehistoric monumental sculpture.

A first theme of relevance is that of 'taxonomic' definitions. Given the motifs present in it, and their arrangement, with the anthropomorphic figure presiding over the composition wearing a headdress in the form of a 'crescent' pointing downwards, it would be tempting to place the newly found stela within the series of the so-called 'diademated' stelae—see various descriptions in Santos Correia, 2009; 2010; Enríquez Navascués and Fernández Algaba, 2010; Cardoso, 2011; Berrocal Rangel, 2012. Potentially, this classification could find additional support in the fact that the Cañaveral de León stela was found at a short distance from a Bronze Age tomb containing what has been described as one of the very few examples of silver diadems known in Iberia.

However, added to the impossibility of going beyond the generic identification of the inverted crescent as a possible 'headdress', focusing solely on that trait and its presumed feminine condition (as it is usually the case) (see critique in García Sanjuán, 2011; Díaz-Guardamino, 2014) would not be very helpful towards the understanding of the social and ideological significance of the new stela. Human figures with 'headdress' do not fit a specific 'type' but appear represented in different formats and have connections with a wide range of stelae and graphic traditions (Fig. 8) (Díaz-Guardamino, 2010: 225–292). There are various instances in which stelae with 'headdresses' and 'warrior' stelae are found together, such as Dehesa Boyal in Hernán Pérez and El Oreganal (Torrejón Rubio), both in Cáceres, or Los Llanos, in Zarza Capilla (Badajoz) (Díaz-Guardamino, 2010: 264–267). Furthermore, importantly, that is the case with stela #2 at Almadén de la Plata (Sevilla) (García Sanjuán et al., 2006), which depicts two personages of identical graphical status (same size, same location within the composition), one of whom is characterised by a panoply of weapons (horned helmet, shield and sword) while the other presents as its sole attribute an oversized crescent-like motif 'crowning' its head and its shoulders. Stela #2 of Almadén de la Plata reveals the methodological limitations of taxonomical approaches based solely on the identification of graphic motifs, and challenges the very concept of 'diademated stelae'. Here, the 'headdress personage' and 'warrior personage' do not belong to two different series or 'types' of stelae, allegedly separated in time and/or geography. At most, the 'headdress' motif appears to denote a personage apparently characterised in different (and possibly complementary) fashions from the warrior. This happens, more subtly, in other sculptures ranging widely in size, shape and graphic composition. Indeed, there are anthropomorphs in the so called 'warrior stelae' that feature unspecified, often crescent-like motifs above their heads, a point that has been overlooked by traditional research on these monuments – see discussion in García Sanjuán, 2011. Therefore, we prefer a more 'neutral' term, simply designating the motif as 'headdress', thus avoiding narrow ad hoc classifications that prevent a more fluid analysis of prehistoric sculpture.

A second theme concerns the materiality of the stela. The multidisciplinary approach undertaken in this study provides an integral view of the stone used as raw material and the work deployed to shape and dress it. The foliated rhyolite porphyry used to sculpt the stela is compatible, from a petrographic and compositional point of view, with some porphyritic coherent facies of the Bodonal-Cala complex, located some 16 km to the north of the Cañaveral de León stela find spot, as the crow flies (Apalategui et al., 1990). The natural planar fabric of this facies creates loose blocks of metric and formal characteristics similar to the one used to carve the Cañaveral de León stela. Thus, nature spared the sculptors a more laborious quarrying process. Interestingly, a prototypical example of a 'diademated' stela was found near Bodonal de la Sierra stela (Berrocal Rangel, 1987).

RTI analysis revealed the carving work deployed, both in terms of the motifs as such, as well as the sequence in which they were made. The homogeneous technique observed in the execution suggests all motifs were made as part of a single creative act, starting with the anthropomorphic figure, which presides over the composition, and then continuing with the elements surrounding it. No later graphic additions have been detected, which is important in terms of both the chronology and biography of the stela. It is worth noting the presence of motifs not previously recorded in connection with stelae depicting personages with 'headdresses', such as a possible 'container' under its hand, or a 'mirror-like' motif to the side of the personage's neck.

A remarkable element of the work deployed on the stela was its coating with reddish pigment (perhaps iron oxide), probably intended to enhance the chromatic contrast between the stela's frontal surface,

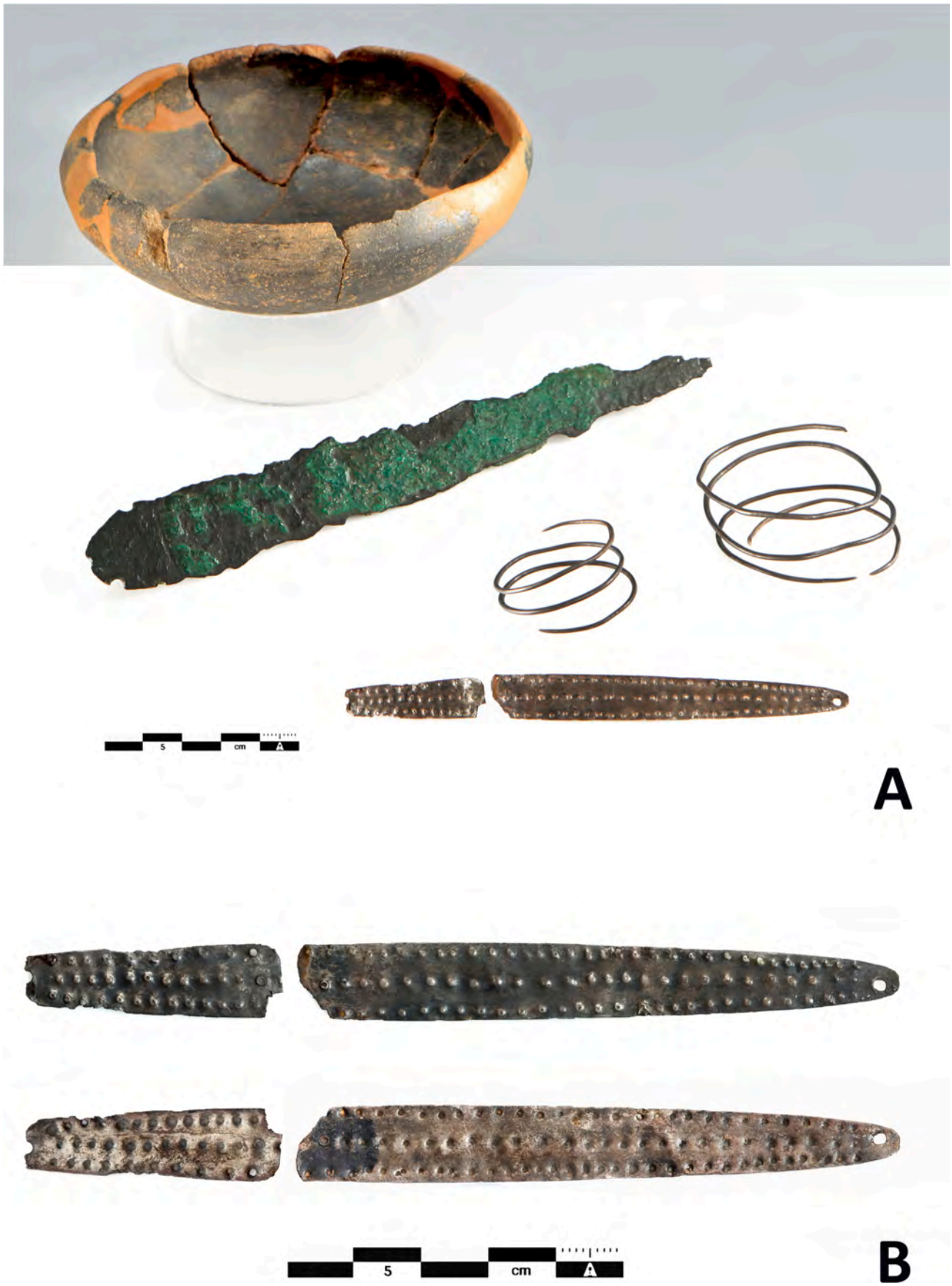

Fig. 12. Grave goods of La Papúa I cist #2. A) Assemblage of objects found in the cist; B) Detail of the silver 'diadem'. Photograph: Miguel Ángel Blanco de la Rubia. By courtesy of the Huelva Museum.

conceived as a 'canvas', and the motifs then engraved onto it. Once made, the engravings would have been more clearly visible, with the whitish colour causing a striking contrast with the frontal surface they were carved on. Undoubtedly, this would have increased the sensorial effect caused by the stela, making it look more 'powerful', while at the same time making it more visible, which would have underlined its role as a landmark. In addition, the fact that the stela has preserved pigments on the obverse surface indicates that at least that face has been protected for a considerable period of time, perhaps suggesting it was buried relatively soon (within a long-term perspective) after its manufacture. In any case, the relationship between red pigments and the mortuary realm, either through the colouring of chamber walls or bodies and portable artefacts, throughout all of Iberian later prehistory cannot be overstated and has to be taken into account when considering the significance of the Cañaveral de León stela.

Precisely, the third main theme the Cañaveral de León stela plays into is that of the relationship between monumental sculptures, burial sites, territoriality and pathways. The survey work and spatial analysis triggered by its discovery, basically a continuation of the research project undertaken by the University of Sevilla in the 1980 s and 1990s (Hurtado Pérez et al., 2011a), reveals the stela was positioned against the backdrop of an intense occupation in the Copper Age and Bronze Age, materialized in settlements, funerary monuments (megaliths) and other burial sites (cist clusters). At the same time, these sites throw light on the character and history of Las Capellanías as a major pathway. It is worth stressing the relevance of some of these sites, very specially La Papúa I-II, which in terms of size, architecture and finds, represents one of the most important Bronze Age settlements in south-western Iberia. The place where the stela was found lies 360 m away from the Mari Vázquez funerary cist cluster, composed of at least four cists. The relationship between some stelae (especially the so-called 'pebble-stelae', yielding naturalistic human representations with headdresses) and cist burials probably dating to the Early Bronze Age has been noted before (Díaz-Guardamino, 2010: 236–237; 262–264), and is consistent with the apotropaic and mnemonic role attributed to Bronze Age statuary (Díaz-Guardamino, 2010; 2014), as well as in Late Neolithic and Copper Age megalithic monuments (Bueno Ramírez et al., 2014; Bueno Ramírez et al., 2017).

A striking feature of the Cañaveral de León stela is its association to Las Capellanías, an old pathway running roughly in a north–south direction alongside the Rivera de Montemayor valley. As a result of our surveys, and with the support of historical cartography, the layout of this pathway has been documented for a segment of about 12 km, stretching from the Aracena water reservoir, where it is intercepted by Las Huervas pathway, next to the Coquino dolmen, in the south, all the way to the Fuentes de León cave complex in the north, where significant evidence of late prehistoric activity has been found, and where the Castillo del Cuerno castle emphasizes the strategic role of the place. Among other various material elements connected to Las Capellanías (walls, terraces, bridges, floors), the fresh surveys carried out have revealed a vertically-placed 1.5 m-high monolith with no identifiable graphic elements, located at the ford of Mala Pasá (which in Spanish translates as 'bad pass'). Although no reliable chronology has yet been established for this marker, it does underline the complexity of the stone materiality created over the centuries in connection with the pathway.

Between the 12th and 13th centuries AD, Las Capellanías was part of one of the main communication routes between the lower Guadalquivir valley and the middle Guadiana basin, cutting through the western Sierra Morena mountains. In the 12th century AD geographer Al-Idrisi, described two roads between Sevilla and Badajoz, detailing their stages and stops. The first of them had the following stages: Sevilla to *Kurt* (25 Arab miles); *Kurt* to K.R.T.H. (22 miles); K.R.T.H. to Jerez de los Caballeros (32 miles); and Jerez to Badajoz (42 miles) (al-Idrîsî, 1989). The second route included the following stages: Sevilla to *Kurt* (25 miles); *Kurt* to *Jusani* castle (30 miles); *Jusani* to Q.R.I.H (22 miles); Q.R.I.H to *Sigünsa* castle (12 to Badajoz (42 miles) (al-Idrîsî, 1989). The identification of the main stops named by Al-Idrisi is fairly uncontroversial, as most of the names are still used today. Among the site names not used today, there is widespread agreement to assimilate *Sigünsa*, with today's Gigonza, in Segura de León (Badajoz) and Q.R.I.H with Castillo del Cuerno, in Fuentes de León (Gibello Bravo, 2007; Menéndez Menéndez, et al., 2016). The *Jusani* castle could be Zufre. Las Capellanías fits perfectly within the two mentioned routes, covering the stage between *Jusani* (Zufre) and Q.R.I.H (Castillo del Cuerno).

After the Castilian conquest of Sevilla in 1248 AD, the Cañaveral de León area would further strengthen its connection with the northern Iberian regions, and particularly with the kingdom of León (from which the town takes its modern name), connecting the Guadalquivir and the Guadiana valleys, as attested in the 'privilegio' (privilege) issued by king Fernando III that very same year, by which the municipality of Montemolín was delimited (López Fernández, 2008). The references made in that document to the Hinojales road, the rivers Rivera de Hinojales, Rivera de Huelva and Rivera de las Ferrerías (undoubtedly today's Rivera del Hierro), all the way to Cala River, as well as the importance of transhumance between the kingdoms of Sevilla and Castille from that century on (Carmona Ruiz, 1993; 1994a; 1994b), show, beyond any doubt, the key position of Cañaveral de León in the long-distance routes between those territories.

Cartographic drawings dating to the 19th century AD show Las Capellanías as a road connecting Zufre and Cañaveral de León, which is in line with Al-Idris's itinerary's stage between those two stops (applying a conversion rate of 1.8 km per Arab mile, even the distance of the modern map, 31.5 km, matches that provided by the famous Medieval geographer) (Fundación Aquae, 2015).

In light of all this evidence, it stands to reason that Las Capellanías may well have acted as a communication route between the Guadalquivir and Guadiana valleys already in the Copper Age and the Bronze Age. On the one hand, the position of La Papúa II and Las Pedreras is highly strategic in order to control the Rivera de Montemayor fords and Las Capellanías pathway. On the other hand, the Coquino, Montecosta I, La Papúa and Naranjero dolmens show a linear pattern of distribution alongside both the river and the pathway, which in this sector runs largely in parallel with the former. Thus, it does not seem entirely coincidental that while the Cañaveral de León lacks formal parallels to the south or to the west, analogous examples are found in Bodonal de la Sierra and Granja de Toniñuelo, in Badajoz, to the north, and in the Guadalquivir valley (La Lantejuela (Oliva Alonso, 1983)), to the south-east. In terms of morphology and symbolism, the Cañaveral de León stela also 'connects' the lower Guadalquivir and middle Guadiana valleys.

Of course, the importance of Las Capellanías as a long-distance pathway in the 3rd and 2nd millennia BC may have been linked to the rise and intensification of copper, tin, gold and silver metallurgy. Western Sierra Morena is one of the richest regions of Iberia in terms of metal resources (Hunt Ortiz, 2003). The strategic importance of mining and metallurgy is evidenced in the high number of prehistoric mines in the region, as well as the empirical record of El Trastejón and La Papúa II, the only two Bronze Age settlements excavated in the region, where remains of various metallurgical tasks were recorded (hammers, crucibles, slag, etc.). Also, the presence of golden artefacts, and particularly torcs, in this region of Iberia is of great interest (Díaz-Guardamino, 2010: 240–250). Quite significant is the discovery of several fragments of golden torcs (possibly used as ingots) as part of the rich Bodonal hoard (Enríquez Navascués, 2017: 100-108), some 15 km to the north of the stela findspot.

The fourth theme to be discussed as a result of the study of the Cañaveral de León stela concerns the chronology of the stelae with 'headdresses'. Since no excavation work has been undertaken, no radiocarbon dates are available for the newly discovered stela. In fact, direct radiocarbon chronologies are found wanting for most of the Iberian stelae and statue-menhirs presumed to date to the late 3rd and 2nd millennia BC. Neighbouring sites with radiocarbon determinations

include El Trastejón, La Papúa and Los Postes cave, but those dates only prove the occupation of the region in those millennia, which is obvious through the study of surface finds, and say nothing about the age of the stela itself. The closest spatial association to the stela is the Mari Vázquez clusters of cists, which, on the basis of a surface inspection, appears to be one more of the abundant series of such burials found in the region. The available radiocarbon chronology for the Iberian south-west, shows that cist burials can be securely dated to the Early and Middle Bronze Age (c. 2200–1550 BCE) (García Sanjuán and Hurtado Pérez, 2011). On the other hand, the 'formal' analysis of the graphic motifs engraved on the stela does not provide sufficient information as to establish a precise chronology. As mentioned above, headdresses of various types appear on various kinds of stelae attributed to the Bronze Age. Other objects represented on the Cañaveral de León stela can be tentatively identified: a possible 'comb', 'mirror', and 'brooch' do appear in several 'warrior stelae', while their material correlates are known in Iberia from c. the 13-12th centuries BC, that is, the beginning of the Late Bronze Age (Díaz-Guardamino, 2012).

8. Corollary

The study of the newly discovered Cañaveral de León stela presented in this paper makes a significant contribution to the interpretation of late prehistoric sculpture. This is a remarkable stela in size, morphology and iconography, probably executed on a single event, and decorated with a coating of red pigment. The motifs represented in it draw parallels with others found in Iberian 'warrior' and 'diademated' stelae, hence defeating simple categorisations of prehistoric sculpture. Coupled with the physical and visual properties of the stela as such, its location on (or near) a major pathway was conceived to maximise its visibility as well as its cultural impact and social prominence. The Las Capellanías pathway connected the lower Guadalquivir and Middle Guadiana basins, two of the most flourishing Iberian regions in the 3rd and 2nd millennia, through the river valleys and mountain passes of western Sierra Morena, a region remarkable in itself for its substantial mineral resources. The fieldwork carried out in the last two years, together with the information available from previous research, reveals a dense occupation in the 3rd, and, especially, the 2nd millennia BC in the area surrounding the stela. This includes some remarkable settlements, as is particularly the case with La Papúa II, as well as numerous megalithic monuments and clusters of cist burials. Future research looking deeper into the funerary and settlement context of Iberian prehistoric sculpture, in line with what has been attempted in this paper, will lead to a more precise knowledge of the social significance of these extraordinary productions.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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